REMARKS

Claims 1-6, 8-13, 16-28, 30-37 and 42 are pending. Claims 1, 6, 8, 25, 28 and 37 are independent.

Typographical errors have been corrected in claims 5, 9, 10 and 33 by the present amendment.

Applicants note with appreciation the allowance of claim 2. Applicants respectfully hold rewriting claim 2 into independent form in abeyance until the Examiner has had an opportunity to consider the following remarks regarding the rejected claims.

Claim 5 has been amended to depend from claim 2 and therefore is also allowable.

Claim Objections

The claim objections are believed to be overcome by the claim amendments herein.

Claim Rejections – 35 U.S.C. § 103

1.   Claims 1, 3-5, 11, 34, 35 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: US 2005/0220180 A1) in view of Pedersen et al. (United States Patent No.: US 7,006,500 B1) and further in view of Kukic (United States Patent Application Publication No.: US 2003/0169780 A1).

In the final Office Action, the Examiner admits that Barlev et al as modified by Pedersen et al does not expressly disclose that the DS3 data stream is inversely multiplexed into four streams that each comprise an approximately 11 Mbps stream. The Examiner relies on Kukic to

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purportedly teach a DS3 data stream inverse multiplexed into four lines each having an approximately 11 Mbps stream. Applicants respectfully disagree with the Examiner's assumption that the disclosed ATM data stream in Kukic is a 45 Mbps (DS3) stream. First, Kukic only discloses at most an 8 Mbps ATM cell stream that is divided only over DS1 or T1 (1.544 Mbps) links that cannot accommodate an approximately 11 Mbps stream as claimed. See paragraphs [0004], [0006], [0009] and [0016] of Kukic. Second, claim 1 recites that a DS3 stream is inverse multiplexed into four parallel data streams that are then packetized by the recited framer. The ATM data stream disclosed in Kukic is already packaged into cells prior to being divided and therefore does not teach the DS3 stream nor parallel data streams recited in claim 1.

In the Office Action, the Examiner admits that Barlev et al does not explicitly disclose that the DS3 data stream is inversely multiplexed into four streams that each comprise an approximately 11 Mbps stream or that the data streams modulated by the modems corresponds to 13 Mbps or a framer adapted to receive each of the said parallel data streams and to generate a stream of packets with each packet having a packet index number and a packet stream number corresponding to is respective data stream. The Examiner relies on the bonded link interface 26 in Fig. 1b in Pedersen et al to purportedly teach a framer as claimed and cure these deficiencies. Applicants respectfully disagree.

The bonded link interface 26 in Pedersen et al is disclosed as aggregating cells into bonded link frames for transmission via a single corresponding physical link 30. Thus, the bonded link interface 26 in Pedersen et al does not teach receiving each of plural inversely multiplexed parallel streams as claimed in claim 1.

For the sake of argument, neither the link bonding engine 24 nor the native link interface 22 depicted in Fig. 1b of Pedersen et al teaches a framer that generates packets from parallel data streams that have a packet index number and a packet stream number as recited in claim 1. The link bonding engine 24 and the native link interface 22 are described in the context of ATM cells that exist in the native flow. The native link interface 22 can modify the cells to include

additional header information or transmit the cells unmodified per col. 5, lines 11-16 of Pedersen et al but, in either case, does not generate cells which appear to have been analogized as packets in the rejection with reference to the bonded link interface 26 placing cells across physical links. The frame scheduler 55 in the link bonding engine 24 arbitrates among queues of cells, but the cells are not generated by the link bonding engine 24 as they exist in the native flow. Further, the sequence number relied on in the Office Action is a cell sequence number and therefore is provided to a cell that existed in the native flow and was not generated by the link bonding engine in contrast with the framer as claimed.

The claimed invention is advantageous because, among other reasons, data streams inversely multiplexed from a DS3 data stream are packetized at the framer without concern for existing structures in a stream such as ATM cells; therefore, the claimed invention obviates the mapping, queuing of cells, and encapsulation operations described in Pedersen et al. Also, the claimed invention transports a high speed data stream such as DS3 over a few copper pairs operating at very high bandwidth (e.g., 13 Mbps) which is useful over a short range (e.g., a maximum distance of 2,300 feet) or, when used in a back-to-back configuration the implements a loopback advantage of the present invention (e.g., as exemplified in paragraph [0021] and Fig. 2 or in paragraph [0038] and Fig. 5b of the application) in two or more 2,300 feet segments. The HSAS described in Barlev et al does not teach the claimed invention. As stated in paragraphs [0031] and [0032] of Barlev et al, the stated objective of the HSAS disclosed therein is to transport a high speed data stream over a plurality of relatively low bandwidth twisted copper pairs over a "long range communication channel" that is exemplified in Table 1 of Barlev et al to be not less than 6,000 feet. Further, paragraph [0032] of Barlev et al states that the HSAS disclosed therein and relied on to purportedly teach the claimed invention is only for a link from the CO to the node and not a link over the *"relatively short distance* 'drop segment,' i.e., from the node to the user." xDSL and not the disclosed HSAS is used for the drop segment.

In view of the foregoing, Applicants respectfully request withdrawal of the rejection of independent claim 1, its dependent claims 3, 4 and 11. Independent claim 34 is similar to claim

1 and is therefore also believed to be allowable over the cited art as well as its dependent claims
35 and 42.

2.   Claims 6, 28 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable
over Barlev et al. (United States Patent Application No.: US 2005/0220180 A1) in view of
Pedersen et al. (United States Patent No.: US 7,006,500 B1) and further in view of Sheets et al.
(United States Patent No.: 5,437,023).

With regard to claim 6, Barlev et al and Pedersen et al fail to disclose a high speed data
interface and framer as claimed for reasons stated above in connection with claim 1. The
Examiner admits that Barlev et al as modified by Pedersen et al does not expressly disclose that
the processor is adapted to identify a loopback code in said high speed data stream, wherein said
processor is further adapted to pass through a first received loopback code to another device, and
to enter a loopback mode if an nth subsequent loopback code is received without an intervening
loop down code. The Examiner relies on Sheets et al to overcome these deficiencies; however,
Sheets et al teaches away from the claimed invention. Sheets et al discloses an address
acknowledgement system for line elements such as repeaters undergoing loopback testing.
When a test set requests a repeater to enter loopback mode by sending a loopup command, the
repeater acknowledges this command by inverting and transmitting its address back to the test
set. The section of Sheets et al relied on in the Office Action merely describes a three step
process whereby line elements receive an "arm" code from the test set 40 to cause them to look
for a loopup code, and then the test set activates a selected line element with a loopup code, and
then the selected line element acknowledges the code by sending an inverted address to avoid it
being confused with another line element at the test set. Thus, Sheets et al describes specifically
addressing selected line elements and is completely silent regarding a line element passing a
loopback code and then entering a loopback mode if a subsequent code is received without an
intervening loop down code.

In view of the foregoing, Applicants respectfully request withdrawal of the rejection of independent claim 6. Independent claim 37 is similar to claim 6 and is therefore also believed to be allowable over the cited art. Claim 28 recites a system for receiving that is generally the inverse of the system for transmitting recited in claim 6 and therefore is not taught or suggested by the cited art for reasons stated above in connection with claim 1 with reference to Barlev et al and Pedersen et al and in connection with claim 6 with reference to Sheets et al.

3.   Claim 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: US 2005/0220180 A1) in view of Pedersen et al. (United States Patent No.: 7,006,500 B1). With respect to claim 27, the Examiner apparently also relies on Kukic on pages 16 and 17 of the office action.

In the Office Action, the Examiner admits that Barlev et al does not explicitly disclose data streams demodulated by modems that correspond to 13 Mbps, each packet having a packet number and a stream identifier, and a deframer adapted to receive said parallel streams of packets and to synchronize packets from the parallel streams based on the stream identifiers and packet numbers. The Examiner relies on the bonded link interface 26 in Fig. 1b, sequence number and user flow identification in Pedersen et al to purportedly teach, respectively, a deframer, packet index number and packet stream number as claimed and cure these deficiencies. Applicants respectfully disagree.

The bonded link interface 26 in Pedersen et al is disclosed as receiving cells via a single corresponding physical link 30. Thus, the bonded link interface 26 in Pedersen et al does not teach receive parallel streams of packets as claimed in claim 25.

The claimed invention receives a DS3 data stream over only a few conductors by demodulating parallel signals received on each of four conductors that transports approximately 13 Mbps which is useful over a short range (e.g., a maximum distance of 2,300 feet). The HSAS described in Barlev et al does not teach the claimed invention. As stated in paragraphs [0031]

and [0032] of Barlev et al, the stated objective of the HSAS disclosed therein is to transport a high speed data stream over a plurality of relatively low bandwidth twisted copper pairs over a "long range communication channel" that is exemplified in Table 1 of Barlev et al to be not less than 6,000 feet. Further, paragraph [0032] of Barlev et al states that the HSAS disclosed therein and relied on to purportedly teach the claimed invention is only for a link from the CO to the node and not a link over the *relatively short distance* 'drop segment,' i.e., from the node to the user." xDSL and not the disclosed HSAS is used for the drop segment.

Thus, in view of the foregoing, Applicants respectfully request withdrawal of the rejection of independent claim 25, its dependent claim 26. Further, claim 27 is not taught or suggested by the cited art for reasons stated above in connection with claim 1 with reference to Kukic.

4.   Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Pedersen et al. (United States Patent No.: US 7,006,500 B1) and Kukic (Unites States Patent Application Publication No.: US 2003/0169780 A1) and further in view of Wolf et al. (Unites States Patent Application Publication No.: US 2002/0080825 A1).

Applicants respectfully request withdrawal of the rejection of dependent claim 36 in view of the remarks above with respect to its independent claim 34. Wolf et al does not cure the above-described deficiencies. Dependent claim 36 further recites determining from a stream identifier received from each of four streams that a miswire condition exists between two of the conductors. Wolf et al merely discloses insertion of identification codes for possible wiring errors but is silent as to such codes being stream identifiers of respective parallel data steams inversely multiplexed from a DS3 data stream to know if two of four twisted paid conductors have been miswired. Accordingly, withdrawal of this basis of rejection is respectfully requested.

5.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et
al. (United States Patent Application Publication No.: US 2005/0220180 A1) in view of Pedersen
et al. (United States Patent No.: US 7,006,500 B1) and Somekh et al. (United States Patent No.:
7,230,977 B1) and further in view of Peters (United States Patent No.: US 6,967,589 B1).

The Examiner admits that that Barlev et al as modified by Pedersen et al does not
specifically disclose at least one switch adapted to configure said apparatus as a repeater unit or a
non-repeater unit, said apparatus being operable as a repeater when said high speed data interface
thereof is connected to a second said high speed data interface of a second said apparatus to
allow a high speed data stream to pass between the two said high speed data interfaces and data
streams to be transmitted to and received from said plurality of modems of each of said apparatus
and said second apparatus via twisted pair conductors.

Applicants respectfully submit that Somekh et al does not cure these deficiencies. The
Examiner purports that the high-speed modems 60 and 68 in Fig, 4 of Somekh et al teach the
first and second claimed apparatuses, yet the high-speed modems 60 and 68 lack many of the
recitations of the claimed apparatus. For example, the recited first and second apparatuses each
comprise a high speed data interface, a framer and a plurality of modems as claimed. Neither of
the high-speed modems 60 and 68 has these elements. Also, claim 8 recites that a high speed
data stream passes between the first and second apparatuses where they are connected, and that
their respective plurality of modems are connected to twisted pair to transmit and receive data
streams. By contrast, however, item 38 between the high-speed modems 60 and 68 is twisted
pair and the other sides of the modems 60 and 68 are connected to digital trunks. Thus, these
two modems do not teach the first and second claimed apparatuses.

The Examiner admits that the combination of Barlev et al, Pedersen et al and Somekh et
al does not explicitly teach at least one switch adapted to configure the claimed apparatus as a
repeater unit or a non-repeater unit. Peters et al is relied on merely for purportedly teaching dip
switch it identify a unit as acting as a repeater. As claimed, however, the recited apparatus is
operable as a repeater when said high speed data interface thereof is connected to a second said

high speed data interface of a second said apparatus to allow a high speed data stream to pass

between the two said high speed data interfaces and data streams to be transmitted to and

received from said plurality of modems of each of said apparatus and said second apparatus via

twisted pair conductors. Peters et al fails to disclose such a repeater. Moreover, Peters et al fails

to cure the above noted deficiencies of the other references. Accordingly, withdrawal of this

basis of rejection is respectfully requested.

6.   Claims 9, 10, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view

of Pedersen et al. (United States Patent No.: US 7,006,500 B1) and Somekh et al. (United States

Patent No.: US 7,230,977 B1) and Peters (United States Patent No.: 6,967,589 B1) and further in

view of Gewin et al. (United States Patent No.: 5,060,226).

Claims 9, 10, 31 and 32 are dependent claims that include at least the elements of

independent claim 8. Thus, these claims are also allowable over the cited art in view of the

foregoing arguments with respect to claim 8. Gewin et al does not cure the above-described

deficiencies. The dip switches described in Gewin et al for configuring loopback addressing are

relied on to purportedly teach configuring a device to be a repeater as claimed (e.g., a west or

east repeater closest to the central office or customer premises equipment, respectively). This is

incorrect. A repeater is exemplified in the application in Figs. 1 and 5a and paragraph [0033]

(e.g., the DS3 LIU 102 in each of two units 100 are connected together to pass DS3 therebetween

and provide TP connections upstream and downstream of the repeater). No loopback devices

disclosed in Gewin et al are configured as recited in amended claim 8. Further, none of the cited

references disclose a switch for configuring an apparatus as recited in claim 8 as a repeater

having a high speed data interface connected to that of another apparatus or as a stand-alone unit

operating as a non-repeater. Withdrawal of this basis of rejection is therefore respectfully

requested.

7.   Claims 30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Barlev et al. (United States Patent Application Publication No.: US 2005/0220180 A1) in view of

Pedersen et al. (United States Patent No.: US 7,006,500 B1) and Somekh et al. (United States Patent No.: US 7,230,977 B1) and Peters (United States Patent No.: US 6,967,589 B1) and further in view of Sheets et al. (United States Patent No.: 5,437,023).

Applicants believe these claims to be allowable for reasons stated above in connection with claim 8 from which they depend. With regarding to item 14 on pages 16 and 17 of the final Office Action, the Examiner apparently omitted any reasoning to apply the cited art to reject claims 30 and 33 in the Office Action. Thus, if these claims are not allowed, Applicants respectfully submit that another office action is needed containing such reasoning to afford the Applicants an opportunity to respond to this basis for rejecting claims 30 and 33.

8.   Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: 2005/0220180 A1) in view of Pedersen et al. (United States Patent No.: US 7,006,500 B1), Somekh et al. (United States Patent No.: US 7,230,977 B1) and Peters (Unites States Patent No.: US 6,967,589 B1) and further in view of ADC Telecommunications "A" and "C".

Claims 12 and 13 are dependent claims that include at least the elements of independent claim 8. Thus, these claims are also allowable over the cited art in view of the foregoing arguments with respect to claim 8. ADC Telecommunications "A" and "C" do not cure the above-described deficiencies. Withdrawal of this basis of rejection is therefore respectfully requested.

9.   Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: US 2005/0220180 A1) in view of Pedersen et al. (United States Patent No.: US 7,006,500 B1), Somekh et al. (United States Patent No.: US 7,230,977 B1) and Peters (United States Patent No.: 6,967,589 B1) and further in view Stearns (United States Patent No.: US 7,058,011 B1).

Claim 16 is a dependent claim that includes at least the elements of independent claim 8. Thus, this claim is also allowable over the cited art in view of the foregoing arguments with respect to claim 8. Stearns et al does not cure the above-described deficiencies. Withdrawal of this basis of rejection is therefore respectfully requested.

10.   Claims 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlev et al. (United States Patent Application Publication No.: US 2005/0220180 A1) in view of Pedersen et al. (United States Patent No.: US 7,006,500 B1), Somekh et al. (United States Patent No.: US 7,230,977 B1) and Peters (United States Patent No.: US 6,967,589 B1) and further in view Koenig et al. (United States Patent No.: US 6,275,510 B1).

Claims 17-24 are dependent claims that include at least the elements of independent claim 8. Thus, these claims are also allowable over the cited art in view of the foregoing arguments with respect to claim 8. Koenig et al does not cure the above-described deficiencies. Withdrawal of this basis of rejection is therefore respectfully requested.

Conclusion

In view of the amendments and arguments set forth above, Applicants submit that the present application is in condition for allowance and would appreciate early notification of the same.

Invitation for a telephone interview

The Examiner is invited to call the undersigned at (202) 659-9076 if further issues remain with allowance of this case.

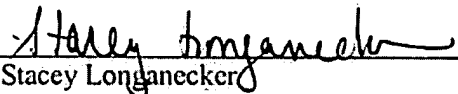## *Deposit Account Authorization*

Although no fee is believed due by submission of this paper, authorization is hereby

made to charge any fees due or outstanding, or credit any overpayment, to Deposit Account No.

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Respectfully Submitted,

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